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Historical and Architectural Documentation of the Interurban Trolley Bridge at Three Mile Creek, Fort Riley, Kansas

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September 2009



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Abstract: Through the years, laws have been enacted to preserve our national cultural heritage. The National Historic Preservation Act of 1966 as amended (NHPA) was created to provide guidelines and requirements aimed at preserving tangible elements of our past, primarily through the creation of the National Register of Historic Places (National Register or NRHP). Two sections of this legislation (Sections 110 and 106) contain requirements for federal agencies to address their cultural resources, defined as any prehistoric or historic district, site, building, structure, or object.

The trolley bridge over Three Mile Creek at Fort Riley has been in place since 1914. Part of the Manhattan City and Interurban Railway Company (1909-1928), the structure previously did not previously undergo an assessment for a determination of eligibility (DOE). This project provides in-depth historical and architectural/engineering information about the bridge. The included documentation consists of descriptions, digital photographs, and known modifications to the bridge, as well as a historical context for the bridge. As a result of this thorough assessment, ERDC-CERL has determined that the bridge is not eligible for nomination to the National Register because of a loss of integrity by both the site and structure.

Table of Contents

List of Figures	iv
Preface	v
Unit Conversion Factors	vi
1 Introduction	1
1.1 Background	1
1.2 Objective	2
1.3 Approach	3
1.3.1 Archival research	3
1.3.2 Site visits	3
1.3.3 Analysis	4
1.3.4 Acknowledgements	4
2 Historical overview	5
2.1 Physical history	5
2.2 Historical context	5
2.2.1 Fort Riley Overview	6
2.2.2 Establishment of Trolley service in the study area	9
2.2.3 Heyday of Interurban Railway	18
2.2.4 Three Mile Creek Bridge	22
3 Structural overview	25
3.1 Description of the Three Mile Creek Trolley Bridge	26
3.1.1 Trolley bridge superstructure	26
3.1.2 Trolley bridge substructure	29
3.2 Description of footbridge addition	31
3.2.1 Footbridge superstructure	31
3.2.2 Footbridge substructure	32
3.3 Utility lines	32
3.4 Associated buildings	33
4 Eligibility	35
Bibliography	37
Appendix A: Field Photographs	39
Report Documentation Page	

List of Figures

Figure 1. Map of Fort Riley, 2007 (http://143.84.68.5/OurPost/Maps.aspx).	2
Figure 2. 1913 view of trolley car barn, Junction City (JJ Pennell Collection, University of Kansas).	10
Figure 3. Junction City & Fort Riley Railway car on the Republican River bridge, 1907 (JJ Pennell Collection, University of Kansas).	11
Figure 4. Trolley car #2, Junction City & Fort Riley Railway, 1901 (JJ Pennell Collection, University of Kansas).	11
Figure 5. Larger, enclosed streetcar, Junction City, 1906 (JJ Pennell Collection, University of Kansas).	12
Figure 6. The depot building at Fort Riley, circa 1905 (Geary County Historical Society, Vertical File: Transportation-St. Cars).	13
Figure 7. 1904 office and car barn for the Junction City & Fort Riley Railway, 1913, (JJ Pennell Collection, University of Kansas).	13
Figure 8. Manhattan City & Interurban Railway car number 701 in 1910 (Chandler, 183).	15
Figure 9. Completion of the first full Manhattan-Junction City run by the Manhattan City & Interurban Railway, 14 October 1914 (Chandler, 184).	17
Figure 10. Map showing extent of combined track from Junction City to Manhattan, circa 1918 (Chandler, 183).	18
Figure 11. Map showing the shared lines on Fort Riley, circa 1918 (Chandler, 121).	20
Figure 12. Aerial view of historic trolley bridge site (Fort Riley 2009).	25
Figure 13. General view of Warren trusses (ERDC-CERL 2009).	26
Figure 14. Truss top chords, bottom chords, and web members (ERDC-CERL 2009).	27
Figure 15. INLAND stamp on a truss top chord (ERDC-CERL 2009).	28
Figure 16. ILLINOIS USA - 9 stamp on a truss web member (ERDC-CERL 2009).	28
Figure 17. Gusset plate (left) and knee brace (right), (ERDC-CERL 2009).	29
Figure 18. Deck beam-truss connection (left) and cross-bracing (right), (ERDC-CERL 2009).	29
Figure 19. East supporting bridge abutment (ERDC-CERL 2009).	30
Figure 20. South and north views of west abutment, (ERDC-CERL 2009).	31
Figure 21. Footbridge addition, (ERDC-CERL 2009).	32
Figure 22. Footbridge supporting concrete monoliths (ERDC-CERL 2009).	32
Figure 23. Utility lines flank the footbridge (ERDC-CERL 2009).	33
Figure 24. Building 236, the Junction City & Fort Riley Railway Station (ERDC-CERL 2009).	33

Preface

This study was conducted for the Conservation and Restoration Branch, Environmental Division, Fort Riley, Kansas under MIPR9FDATENV05. The technical monitor was Ed Hooker III, Historic Architect, Conservation and Restoration Branch, Environmental Division, Fort Riley, Kansas.

The work was performed by the Land and Heritage Conservation Branch (CN-C) of the Installations Division (CN), U.S. Army Engineer Research and Development Center – Construction Engineering Research Laboratory (ERDC-CERL). Dr. Susan I. Enscoe of CERL was principal investigator for the project. At the time of publication, Dr. Christopher M. White was Chief, CEERD-CN-C; Dr. John T. Bandy was Chief, CEERD-CN; and Dr. Timothy J. Hayden was the Acting Technical Director for Military Ranges and Lands, CEERD-CV-T. The Deputy Director of ERDC-CERL was Dr. Kumar Topudurti, and the Director was Dr. Ilker Adiguzel.

COL Gary E. Johnston was Commander and Executive Director of ERDC, and Dr. James R. Houston was Director.

Unit Conversion Factors

Multiply	By	To Obtain
acres	4,046.873	square meters
cubic feet	0.02831685	cubic meters
cubic inches	0.00001638706	cubic meters
feet	0.3048	meters
inches	0.0254	meters
miles (U.S. statute)	1.609347	kilometers
square feet	0.09290304	square meters
square miles	2,589,998.00	square meters
yards	0.9144	meters

1 Introduction

1.1 Background

Through the years, the U.S. Congress has enacted laws to preserve our national cultural heritage. The first major preservation legislation was the Antiquities Act of 1906. It was instrumental in securing protection for archeological resources on federal property. The benefits derived from the Antiquities Act and subsequent legislation precipitated an expanded and broader need for the preservation of historic cultural resources. With this growing awareness, the U.S. Congress codified the National Historic Preservation Act of 1966 (NHPA) on 15 October 1966, the most sweeping cultural resources legislation to date.

The U.S. Congress created the NHPA to provide guidelines and requirements aimed at preserving tangible elements of our past, primarily through the creation of the National Register of Historic Places (NRHP). Contained within this piece of legislation (Sections 110 and 106) are requirements for Federal agencies to address their cultural resources, defined as any prehistoric or historic district, site, building, structure, or object. Section 110 requires Federal agencies to inventory and evaluate their cultural resources. Section 106 requires the determining the effect of Federal undertakings on those properties deemed eligible or potentially eligible for the NRHP. If the effect is considered adverse, measures must be taken to mitigate that negative impact. Documentation to Historic American Buildings Survey (HABS) or Historic American Engineering Record (HAER) standards is often utilized for mitigation purposes.

Fort Riley is located in the northeastern part of Kansas, about 135 miles west of Kansas City and 130 miles north-northeast of Wichita. It consists of six installations including the Main Post, Camp Funston, Marshall Army Air Field, Camp Whiteside, Camp Forsyth, and Custer Hill (Figure 1). The post was originally established in 1853 at the location where the Smoky Hill and Republican rivers join to form the Kansas River, just east and a little north of Junction City. Fort Riley is home to the U.S. Army 1st Infantry Division, a unit with a distinguished past and present, including being first on the beaches at Normandy in World War II (WWII), and serving as the first division to fight in Vietnam. The 1st Infantry Division

(ID) and Fort Riley, Kansas, provide training and support to ensure their soldiers are constantly ready for battlefield deployment.

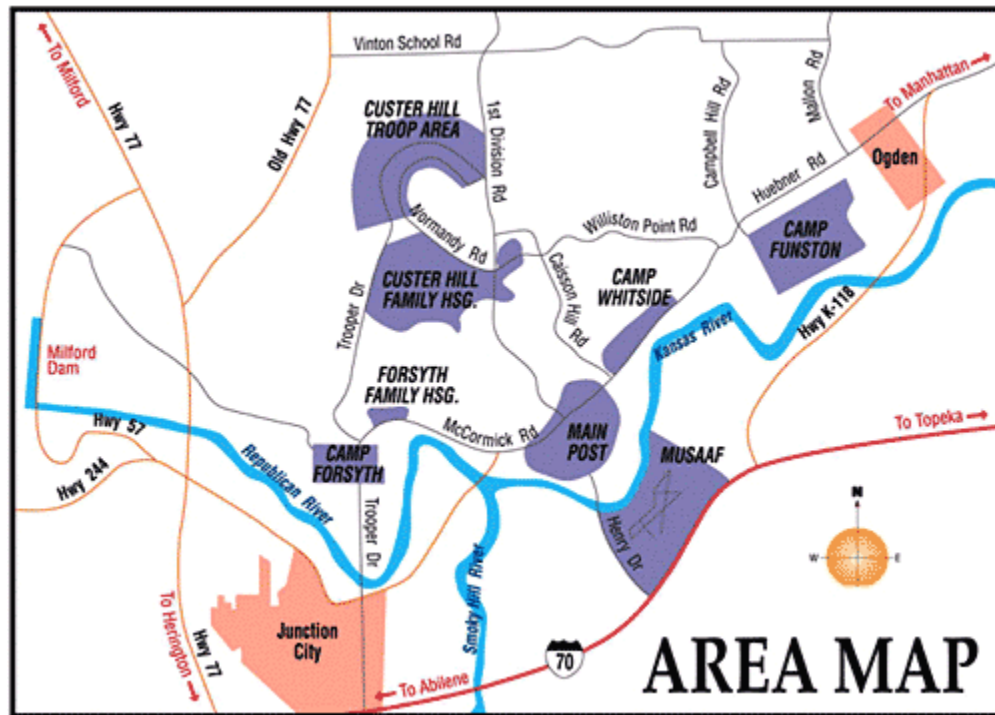


Figure 1. Map of Fort Riley, 2007 (<http://143.84.68.5/OurPost/Maps.aspx>).

The existing trolley bridge over Three Mile Creek is one of the few surviving properties at Fort Riley to be associated with the interurban trolley lines that ran between Manhattan and Junction City, Kansas. The bridge was constructed in May 1914 as part of the Manhattan City and Interurban Railway Company line into Fort Riley. The bridge was used for this purpose until 1928. The Department of the Army is the present owner of the bridge, and it currently serves as a pedestrian footbridge. It is located near the intersection of Williston Point Road and Huebner Road in the eastern part of Fort Riley, and lies between the roadway and the Union Pacific railroad bridges. In close proximity, therefore, three bridges exist for three different modes of transportation.

1.2 Objective

The objective of this research was to prepare architectural and historical documentation on the trolley bridge to HAER standards, and assess the eligibility of the structure according to NRHP guidelines. HAER guidelines require a very structured, highly-detailed description of the structure and historical context. Study of the subject structure was required for NHPA

compliance because it has exceeded 50 years of age, and is potentially eligible for the National Register. For a property to qualify for the NRHP, it (1) must meet at least one of the National Register Criteria for Evaluation, (2) must be significantly associated with an important historic context, and (3) must retain sufficient integrity to convey its significance.

1.3 Approach

Per Section 110 of the NHPA, Fort Riley needs to evaluate all of its buildings and structures potentially eligible for the NRHP. Under a Military Interdepartmental Purchase Request (MIPR), the Engineer Research and Development Center's Construction Engineering Research Laboratory (ERDC-CERL) was retained to document and evaluate the trolley bridge for potential NRHP eligibility.

1.3.1 Archival research

The project team utilized primary and secondary literature to determine the general history of trolley/streetcar transport development in the United States, the history of trolley systems in the Fort Riley area, and the specific history of the Three Mile Creek trolley bridge. Sources included books, journal articles, photographs, manuscripts, maps, and newspaper articles found at area libraries, museums, and historical societies' repositories. The Fort Riley Museum Division provided textual and photographic resources. The Cultural Resources Office at Fort Riley provided historical maps of the study area. Previous ERDC-CERL building inventories conducted for Fort Riley provided the necessary information for a brief overview of the installation's history.

1.3.2 Site visits

The research team conducted a site visit to gather the architectural and historical information with which to create this report. The site visit occurred on 4–8 May 2009. During that visit, a researcher conducted site reconnaissance on foot using photography, sketches, and note-taking to gather architectural/ engineering data for the property description and to help determine the level of integrity remaining in the bridge. Two other researchers collected archival information from the Geary County Public Library, the Geary County Historical Society, the Riley County Historical Society, the Manhattan Public Library, the Fort Riley Cultural Resources Office, and the Fort Riley Cavalry Museum.

1.3.3 Analysis

After the initial research was complete, the team analyzed the gathered information. Archival and field information was integrated throughout the course of the research. Using the archival sources, the research team discovered relevant historical information. The integration of archival and field methods necessitated an integration of visual and written sources in the final report. Although information was located to develop a historic context of the trolley systems that provided transport through Fort Riley, specific data on the trolley bridge was nearly non-existent. A small handful of newspaper and other textual references were located. No historic photographs or engineering plans could be found. Therefore, original conditions could not be definitively determined.

Determination of NRHP eligibility was conducted through application of the National Register Criteria for Evaluation and the seven aspects of integrity, as provided in *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (1991). For determining eligibility, 1901 - 1934 was used as the period of significance because it encompasses the trolley company existence in the Fort Riley area.

1.3.4 Acknowledgements

People that assisted with the formation of this report are Ed Hooker III, Fort Riley Historic Architect; Dave Young, Department of Public Works, Fort Riley; William McKale, Museum Division, Fort Riley; Ms. Gaylynn Childs, Geary County Historical Society Director; and Ms. Linda Glasgow, Riley County Historical Society. Images from Allison Chandler's *Trolley through the Countryside* (Denver: Sage Books, 1963) are reprinted with the permission of Ohio University Press/Swallow Press, Athens, Ohio (www.ohioswallow.com). Photographers by J.J Pennell are reprinted with the permission of the Kansas Collection, Spencer Research Library, University of Kansas Libraries.

2 Historical overview

2.1 Physical history

Table 1. Information pertaining to physical history of Three Mile Creek Trolley Bridge.

Date of erection	1914
Architect	unknown
Original owners, occupants, uses	Manhattan City and Interurban Railway Company
Subsequent owners, occupants, uses	Union Power & Light Company
Builder, contractor, suppliers	Built by the Manhattan City and Interurban Railway Company (Kansas); material from Inland Steel Company, Chicago, Illinois
Original plans and construction	unknown
Alterations and additions:	Removal of trolley tracks, poles, and lines; addition of footbridge.

2.2 Historical context

A hissing sound from the copper wire draped overhead, the urgent clatter of whirling steel wheels on rail joints, and a wailing air horn that commanded respect and attention signaled its coming. Shoving a massive arc headlight and a wooden cowcatcher of imposing dimensions before it, the interurban came racing across the countryside, faster, it seemed, than anything else of man's invention. Trackside vegetation bent aside suddenly at its passing; there was the brief odor of ozone and hot grease from the spinning traction motors; and passengers, reclining in plush-upholstered ease within, looked down idly from the Gothic windows of their varnished vehicle. And then it was gone, leaving behind only a dust cloud and a gently swaying trolley wire.¹

The industrial revolution was late in arriving to transform urban mass transportation systems. Wide-spread long distance train service was in place decades earlier, but within cities the norm remained animal power. As late as 1890, 70 percent of street railways utilized horse drawn street-cars.² A mere twelve years later, 97 percent of all street railway mileage

¹ William D. Middleton, *The Interurban Era*, (Milwaukee, Wisconsin: Kalmbach Publishing Co., 1961), 12.

² George W. Hilton and John F. Due, *The Electric Interurban Railways in America*, (Stanford, California: Stanford University Press, 1964 - second printing), 7.

utilized electric power.³ The primary impediments had been lack of a direct-current motor that was sturdy enough to be mounted on the axles of the jolting streetcars, and creating transmission lines that did not lose excessive amounts of voltage over distance. In the mid-1880s, Frank J. Sprague developed a reliable direct-current motor and designed a spring mounting that served as a shock absorber for the motor. By 1888, Sprague had constructed the first successful urban electric railway, the Richmond Union Passenger Railway. The system consisted of 12 miles of track, an electric powerhouse, and 40 double-motored cars.⁴ His system was picked up by others, and the rush for electric railways was on, with more than 15,000 miles of electric railway in the country by 1901.⁵ Bion J. Arnold created a system in 1896 of three-phase alternating current transmission for streetcar lines, and it was installed by 1899 on the main Chicago system.⁶ With the power supply and mechanical problems solved, electric railways were set to take off.

The new form of transportation quickly revolutionized movement not only in the cities, but in rural areas. People from small towns and farms were able to quickly and easily reach the cities for shopping. The interurbans carried freight between the cities and small towns, opening up retail opportunities for farmers, and providing new markets for urban retailers. As lines grew outward, new communities developed along them, creating an explosion of suburbs, new towns, and transportation corridors. Streetcar ridership continued to increase across the country until it reached a height of 15.7 billion in 1923. After that, automobile ownership attracted people away from the interurbans and streetcar lines, and most lines were out of business by the 1930s.⁷

2.2.1 Fort Riley overview

Fort Riley's interaction with transportation systems did not begin with interurban rail lines. Actually, transportation provided the reason for the post's very existence. After 1803, trade and transportation routes were created through repeated use in the new territories gained in the Louisiana

³ Ibid.

⁴ Ibid.

⁵ Ibid.

⁶ George W. Hilton, "The Wrong Track," *Invention & Technology Magazine*, Spring 1993: n.p.

⁷ Middleton, *The Interurban Era*, 13; David L. Ames and Linda Flint McClelland, *Historic Residential Suburbs*, National Register of Historic Places Bulletin, (Washington, D.C.: National Park Service 2002), 18-20.

Purchase. Forts were quickly established near the trails to provide protection for traders and settlers from conflict with Native American tribes. In what is now Kansas, trade and travel developed along several trails including the Santa Fe Trail, the Oregon Trail and the Smoky Hill Trail. The Santa Fe Trail from Missouri to New Mexico started in 1821. By 1827, Cantonment Leavenworth (soon to become Fort Leavenworth) was established to protect travelers. The Oregon Trail broke away from the Santa Fe Trail a bit west of Kansas City, and ran a little to the north, through the eastern part of what would become Kansas. This trail was increasing in use by the late 1830s. By the early 1850s, the western frontier had moved on from Kansas City, and an Army post was needed farther west. A site was selected in September 1852, strategically located at the junction of the Republican and Smokey Hill Rivers to provide protection for users of the Santa Fe Trail to the south, the Smoky Hill Trail east of the fort, and the Oregon Trail to the north.⁸ The site was occupied by the Sixth Infantry in May 1853, and formally named Fort Riley in June of that year.⁹

There was barely time to construct a basic set of buildings at the fledgling Army post before the manpower needs of the Civil War resulted in a recall of permanent troops back east. With the end of the war in 1865 and the focus on suppression of Indian uprisings, Fort Riley gained a higher profile when the Union Pacific Railroad westward expansion reached the post. During the 1860s and early 1870s, the post served as a base for the intensified conflict between the U.S. military and the Native Americans. The conflict later moved westward, and Fort Riley was left as a post with little importance to the national military strategy. By the mid-1870's, General Philip Sheridan urged the closing of most Army posts in Kansas. The only two forts not abandoned were Fort Riley and Fort Leavenworth. During the next few years however, Fort Riley was minimally occupied and its future remained in doubt.¹⁰

⁸ Robinson & Associates, *Fort Riley: An Historic Overview*, V.I., Report prepared for U.S. Army Corps of Engineers, Kansas City District, (Washington, D.C., October 1989), 11.

⁹ W.F. Pride, *The History Of Fort Riley* (U.S. Cavalry Museum and Fort Riley Historical and Archeology Society, 1926), 61; Major General Bennett Riley had commanded the first wagon train escort over the Santa Fe Trail in 1829, and was promoted for distinguished service during the Mexican War. Department of the Army, *Fort Riley: Its Historic Past*, (U.S. Government Printing Office, 1981), 16, 565-238/115 Region No.6, Vertical File: "228.03 HRC 331 Posts - Riley, Fort.," Center for Military History, Washington, DC.

¹⁰ Department of the Army, *Fort Riley: Its Historic Past*, 19; Robinson & Associates, *Fort Riley: An Historic Overview*, 13.

The threat of closure was effectively extinguished in the mid-1880s when the post was made headquarters of the United States Cavalry. Cavalry and Light Artillery schools were established on post by 1892. These new units enabled expansive new construction and a plan for improving the post was developed, with separate posts at Fort Riley being created for the cavalry and the artillery units. Expansions of the Cavalry and Artillery Schools in the mid-1890s, 1903, and 1909 resulted in the construction of additional buildings by 1910 that filled in the two established posts.¹¹

During this period, Fort Riley became established as an important base of advanced military training. Entire units were sent to Fort Riley to take part in the instruction the schools offered. In 1907, the Cavalry and Light Artillery Schools were consolidated and renamed the Mounted Service School although the training mission remained the same.¹² In the years before the United States entered World War I, activities at Fort Riley centered on cavalry training, horse shows, fox and hound hunts, polo matches, and horse racing.

Fort Riley played a significant role during the nation's involvement in World War I. The 1917 conscription resulted in the quadrupling of Fort Riley's population. The influx required the creation of a Reserve Officer's camp and a large training center. The temporary cantonment was named Camp Funston after General Frederick Funston, a Medal of Honor winner in 1900 for bravery in the Philippine-American War.

Construction of Camp Funston began in July of 1917, and it became one of the largest temporary training centers in the country. When Camp Funston was completed in December of 1917, it was capable of housing and training fifty thousand men. Four divisions in all were trained at Camp Funston during World War I. In three months, 1401 buildings were erected by thousands of civilian workers at a site five miles northeast of the permanent post. The cost was ten million dollars.¹³ Camp Funston consisted mainly of two story wood buildings; it had complete waterworks, electrical, and refrigeration systems. In addition to the standard military facilities such as barracks, administration buildings, and motor pools, the

¹¹ Catherine Crawford, *The planning of Fort Riley*, HABS KS-54, Washington, D.C.: Historic American Buildings Survey (HABS), National Park Service, 1985, 6; "The Growth and Building History of Fort Riley," Anonymous Manuscript, on file at Kansas State Historical Society, Topeka, Kansas.

¹² Department of the Army, *Fort Riley: Its Historic Past*, 19.

¹³ Schooley Caldwell Associates, *Installation Design Guide: Fort Riley* [Preliminary Submission], 1987, 120-6.

camp contained 14 YMCA buildings, three knights of Columbus Buildings, a large library conducted by the American Library Association, and a hostess house under the auspices of the YWCA.¹⁴ Other facilities built simultaneously and associated with Camp Funston include a training camp for medical officers, a cavalry camp, a veterinary camp and remount depot, and an engineer camp.¹⁵ A purely private enterprise known as Army City (or Zone of Camp Activities), grew up east of Camp Funston and provided soldiers with a four block long stretch of restaurants, saloons, stores, theaters, bowling alleys, pool halls, and a 40 chair barber shop.¹⁶

By the early 1920s, the population boom at Fort Riley had receded as postwar manpower needs were greatly reduced. The formerly teeming Camp Funston was dismantled and sold, and without the numbers of troops needed to support it, Army City also disappeared. Activities at the fort returned to the task of education, with the Cavalry School continuing to train officers and enlisted men.

2.2.2 Establishment of trolley service in the study area

The Junction City & Fort Riley Railway began running on 1 August 1901. This illustrious day in the city's life had its beginnings fifteen years earlier when the first attempt was made to create an electric railway system in Junction City. Intending to join the city with the growing military reservation of Fort Riley four miles away, the company plans did not materialize. A second attempt was made three years later in 1889 by a different group of investors, again to no avail. The third attempt proved successful when a new group of investors organized in 1900, and had trolley line construction underway by 1901. They also purchased the local electrical lighting franchise and constructed a new power plant at the intersection of East Eighth and Price Streets. A car barn was added across Eighth Street (Figure 2). The initial four mile line of tracks ran across Washington and Eighth Streets, through a rural area to the Republican River, and onto Fort Riley. The Junction City & Fort Riley Railway was the fourth interurban line in Kansas.¹⁷

¹⁴ "Tenth Infantry Division Draws Recruits from Thirteen States in Heartland of America," *Junction City Daily Union*, 4 February 1950, 4.

¹⁵ Mariani & Associates Architects, *Study/Survey of Historically Significant Army Family Housing Quarters, V.I.*, (Installation Report, Fort Riley, Kansas, June, 1988), 17.

¹⁶ "Tenth Infantry Division Draws Recruits," 4.

¹⁷ Allison Chandler, *Trolley through the Countryside*, (Denver: Sage Books, 1963), 101-102.



Figure 2. 1913 view of trolley car barn, Junction City
(JJ Pennell Collection, University of Kansas).

Construction of the line was relatively easy on the Junction City side due to flat terrain, but the Fort Riley part of the route required a fair amount of earthmoving to bring the tracks to the terminus at Waters Hall, the Fort Riley Headquarters building. From Junction City, the track followed Grant Avenue to the shore of the Republican River. This obstacle was breached by the construction of four-span steel structure on concrete-filled steel piers (Figure 3).¹⁸ The line was expanded in 1906 with the addition of about a mile of track eastward from Waters Hall to the west bank of One Mile Creek, which remained the terminus for the remaining life of the Junction City & Fort Riley Railway.¹⁹

¹⁸ Ibid.

¹⁹ Ibid., 104.

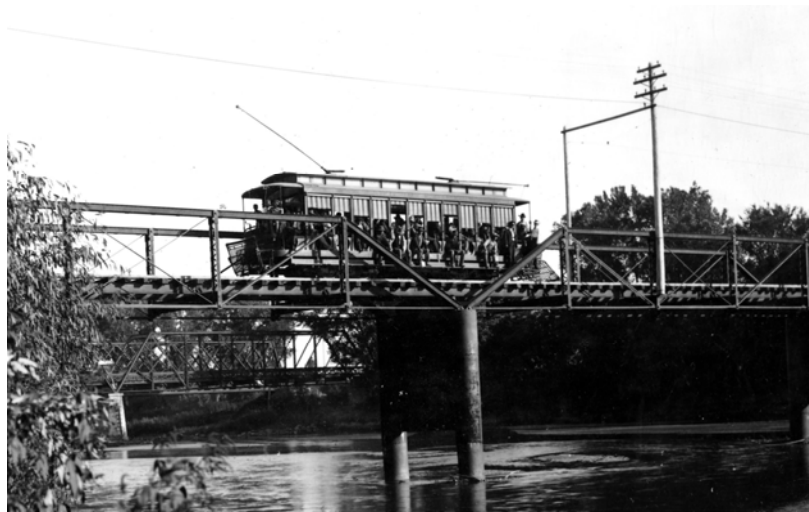


Figure 3. Junction City & Fort Riley Railway car on the Republican River bridge, 1907 (JJ Pennell Collection, University of Kansas).

The line started with two small cars, containing an enclosed seating area and partially exposed platforms on either end (Figure 4). This small fleet had been enlarged by 1906 to include somewhat larger vehicles that were completely enclosed and had a trolley at either end. This advancement allowed the cars to be reversed for return trips, rather than requiring side tracking for switching (Figure 5).²⁰

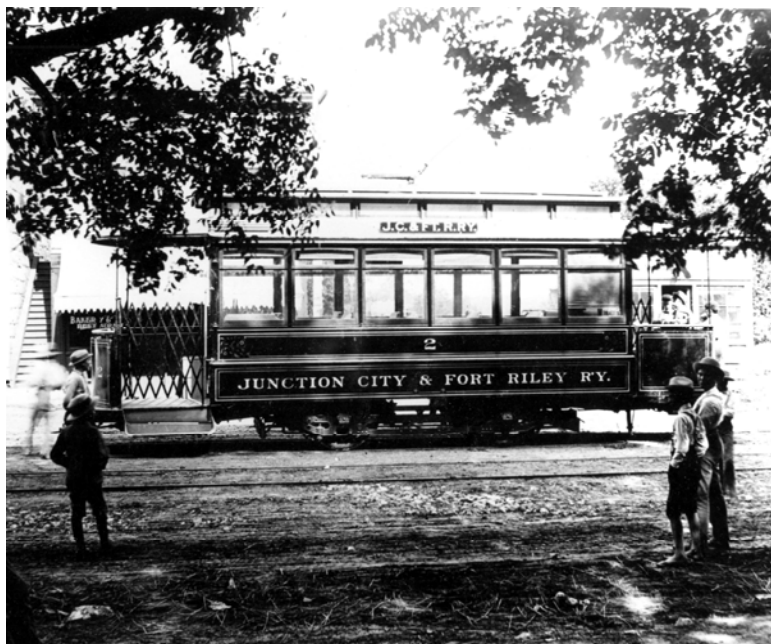


Figure 4. Trolley car #2, Junction City & Fort Riley Railway, 1901 (JJ Pennell Collection, University of Kansas).

²⁰ Ibid., 102-103.

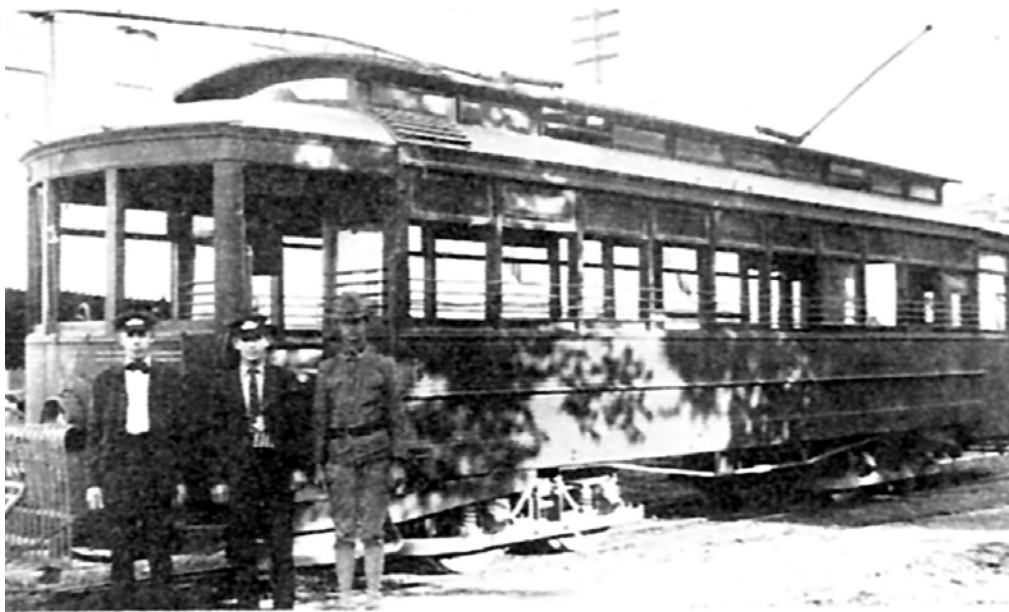


Figure 5. Larger, enclosed streetcar, Junction City, 1906
(JJ Pennell Collection, University of Kansas).

The streetcars were manned by motormen, conductors, and sometimes, guards. The soldiers at Fort Riley apparently tried everything they could think of to avoid paying the fare, and generally displayed quite a bit of rowdiness. According to a former conductor reminisced that “two guards rode each trolley car on pay days and for about three days after in order to keep the boys in tow.”²¹

The original line had few stops and only basic passenger infrastructure. The railway company built the original car barn which served as the first office and ticket booth. A new stone structure (Figure 6) was built at Waters Hall, at the Fort Riley end of the line. This structure contained a passenger waiting room and a baggage storage area, but was not manned by railway staff, and no tickets were sold at this location. Between the two termini, there was a small building for passengers constructed along Grant Avenue near the Union Pacific roundhouse. A waiting area developed at Red Box switch on the Junction City side of the river, and an entrepreneur later built a beer hall there for waiting passengers, or those without the fare for a full journey on the interurban line.²² A new stone building to

²¹ Ibid., 103.

²² Ibid., 102.

house the office and car barn was constructed in 1904 on the east side of Washington Avenue between Fifth and Sixth Streets (Figure 7).



Figure 6. The depot building at Fort Riley, circa 1905 (Geary County Historical Society, Vertical File: Transportation-St. Cars).



Figure 7. 1904 office and car barn for the Junction City & Fort Riley Railway, 1913, (JJ Pennell Collection, University of Kansas).

When the line first began operating, the two cars traveled between Junction City and Fort Riley on a staggered schedule, with the first car leaving the city at 5:10 am. The trip was completed at Waters Hall, and the car left for a return to Junction City at 5:40; at this same time, the second car would leave Junction City, and they would meet along the way. Cars continued to run every half hour until 11:10 pm, when one car retired for the evening. The second car stopped service back at Junction City around 1:00 am.²³ The full four-mile journey originally cost ten cents. Passengers could ride roughly half-way and get on or off at Red Box switch (passing track area). The car barn interurban line office also sold books of ten tickets at a discount.²⁴

Streetcars of the Manhattan City & Interurban Railway Company went into operation on 10 June 1909.²⁵ Located in the town of Manhattan, Kansas some twenty miles away from Junction City, and on the other side of Fort Riley, the streetcar line began as a strictly urban enterprise. Joseph T. West, originally from Minneapolis, Kansas was impressed by the Kansas City interurban lines in September 1908. When he expressed an interest in building something similar, he was advised to investigate Manhattan as an appropriate venue due to the distance to downtown from both the Union Pacific depot and the Kansas State Agricultural College. Within a month, Joseph West had met with Manhattan businessmen, secured a franchise to build and operate an electric streetcar system, moved his family to Manhattan, acquired properties on which to build a power plant and a car barn, and incorporated the family business as a company.²⁶

Construction began the following month, and continued through the winter. As spring approached, ties and rails were being laid, poles erected, and trolley wire strung between them. The power plant was completed with two 125 horsepower boilers, a 250 horsepower engine, and a 200 kilowatt generator.²⁷ The first line completed (the Poyntz line) ran from the Union Pacific depot, through downtown, and out to the college, for a total distance of 2.5 miles. The start of service coincided with the college commencement, and over 4,000 passengers rode the railway on that one day

²³ Ibid., 102.

²⁴ Ibid.

²⁵ Ibid., 113.

²⁶ Ibid., 177.

²⁷ Ibid., 178.

alone.²⁸ A local publication reported on the first days of service, and stated that “on the whole the public is very enthusiastic over this latest and long step in urban advancement.”²⁹ A new line along Fourth Street ran north and then west along the northern edge of the city to then meet up with the Poyntz line near the college. Service began with four trolley cars, then was augmented shortly after with two double-trolley cars, numbers 701 and 702 (Figure 8).

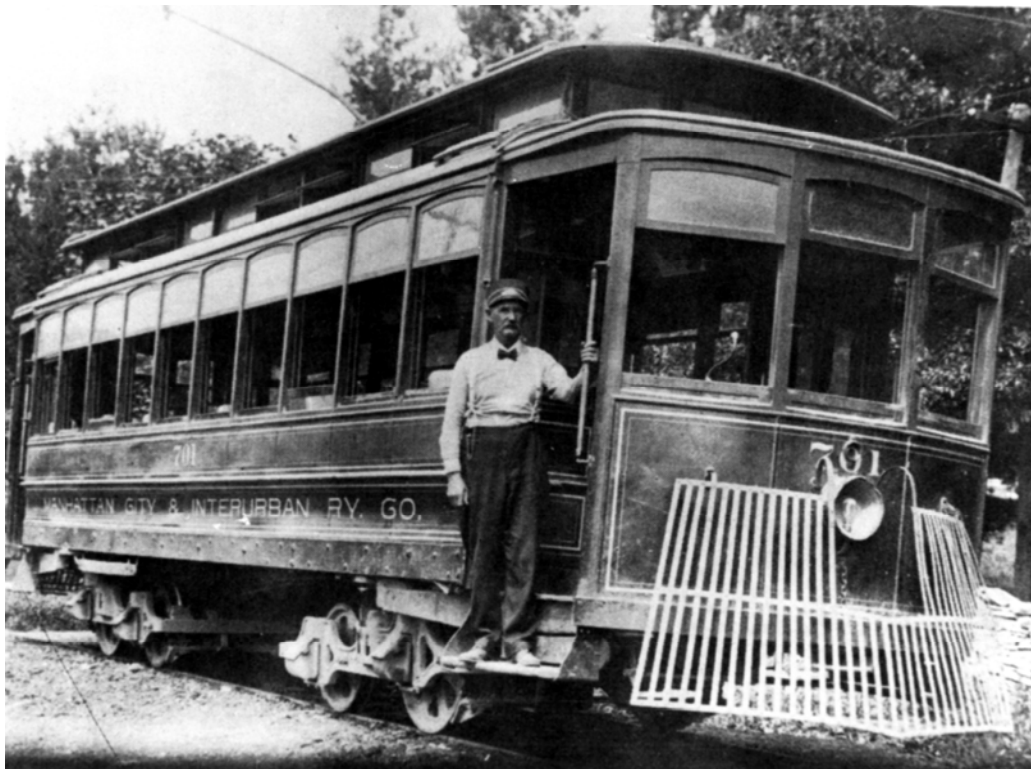


Figure 8. Manhattan City & Interurban Railway car number 701 in 1910 (Chandler, 183).

The initial schedules for the Poyntz and Fourth Street lines ran every twenty minutes, and fares were 5 cents. The city streetcar service was an immediate success, and the company earned \$20,000 in gross revenue in 1910.³⁰ This encouraged West to look beyond the borders of Manhattan, and to earn the “Interurban” part of his company’s name. The primary market for additional revenues in the area was Fort Riley, and plans were soon laid to extend the railway to the installation and beyond to Junction City.

²⁸ Ibid.

²⁹ *The Industrialist*, v. 35 (32): 24 June 1909, 517, in vertical file: Riley Co. Historical Museum (MHK) - Streetcars - General, Manhattan, Kansas.

³⁰ Chandler, *Trolley through the Countryside*, 178.

Getting the line out to Fort Riley was a significant undertaking as it required sixteen miles of track to be laid and the associated land to be prepared. The process was done in stages, with financial incentives for the company and its investors along the way. The first push extended the line out of the city to the southwest. This extension involved overcoming some difficult terrain, including crossing Wildcat Creek and Shockley Gulch, and creating a cut through Stagg Hill.³¹ The interurban line reached to Eureka Lake, a scenic recreation area. Like many other streetcar line entrepreneurs before him, West realized the value of having a destination resort on the line. His company began investing in the property, building the thirty-five acre Eureka Electric Park. The facility eventually combined natural woodland and grassland with a baseball area, lakeshore, amphitheaters, pavilions, carousel, café, and soda fountain. The lake itself was utilized for canoe rental, fishing, and bathing. Completed in June 1913, not only did this park become a successful enterprise in itself, it provided riders (thus income) for the fledgling interurban line.³²

Construction on the line began late in 1911, and track was completed to the Eureka Electric Park in time to carry crowds of passengers to the park for a day of fun on 4 July 1913. Work then continued toward the line's next destination, the city of Ogden. Along the way, the path deviated somewhat from that of the Union Pacific Railroad, instead heading west and then southwest to the northeast part of Ogden. Connection with this city provided another pool of potential passengers, and the interurban line then pushed on toward Fort Riley. Most of the work beyond Eureka Lake occurred in 1913 and early 1914, with Ogden reached in early May 1914.³³

Also in May 1914, construction began on a power relay station (in Ogden near the interurban right of way) to deliver power to the line. The Manhattan City & Interurban Railway purchased additional power from the Rocky Ford Power Company of Manhattan,³⁴ bringing the power to their own power plant in the city and transforming it from alternating current to 600 volt direct current by a rotary converter. Another converter was installed in the Ogden relay station. As traffic increased, a decision was made years

³¹ Ibid., 180.

³² "Hip! Hip! Hurrah!," *Manhattan Nationalist*, 26 June 1913, 1.

³³ Chandler, *Trolley through the Countryside*, 180.

³⁴ This company was also referenced as the Rocky Ford Milling and Power Company or Rocky Ford Power and Milling Company.

later to place a third converter in a small sub-station at the Eureka Electric Park.³⁵

Work on the line continued, quickly covering the short distance remaining between Ogden and Fort Riley.

The tracks entered Fort Riley in the northeast, continuing southwest until it met up again with the Union Pacific Railroad tracks, which it then paralleled to Pawnee Flats, there to turn west toward its meeting point with the Junction City & Fort Riley Railway. The lines were joined, and the first through trip from Manhattan to Junction City occurred 14 October 1914. Dignitaries from the two cities joined members of the West family on the inaugural run (Figure 9). By that time, the company had invested approximately \$400,000 in the combined Manhattan urban streetcar and interurban system.³⁶

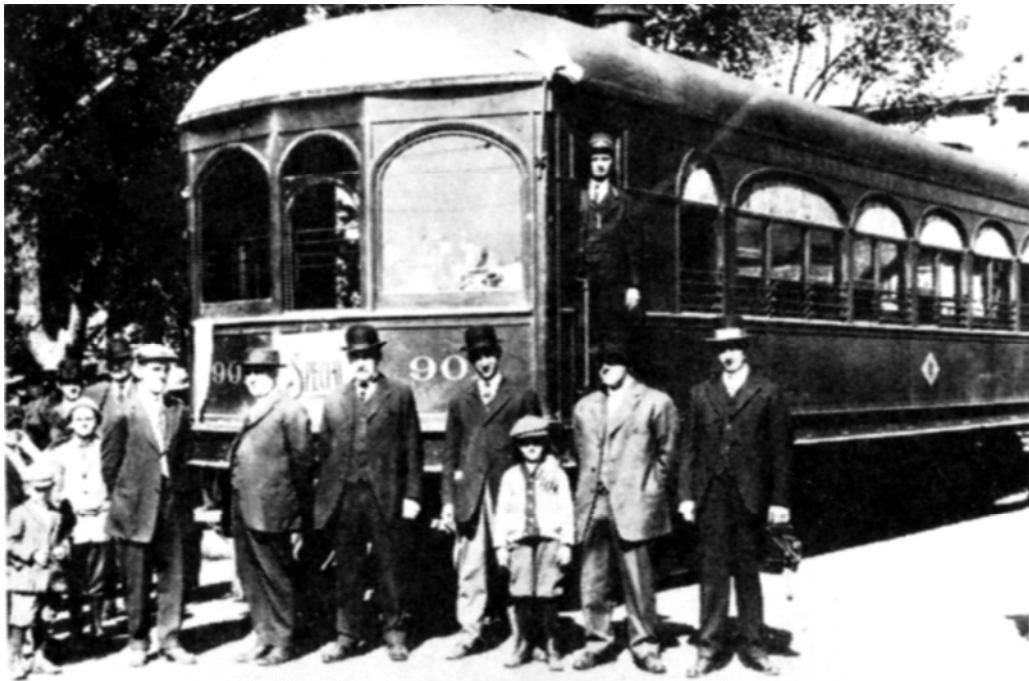


Figure 9. Completion of the first full Manhattan-Junction City run by the Manhattan City & Interurban Railway, 14 October 1914 (Chandler, 184).

³⁵ Chandler, *Trolley through the Countryside*, 181.

³⁶ *Ibid.*, 181-182.

2.2.3 Heyday of interurban railway

Completion of the entire route ushered in a unique arrangement between the two interurban railways in the Fort Riley area. To avoid having passengers transfer between lines at the meeting point, the two lines agreed that the Manhattan City & Interurban Railway cars could continue the four miles to Junction City for a per-trip payment to the Junction City & Fort Riley Railway (Figure 10).

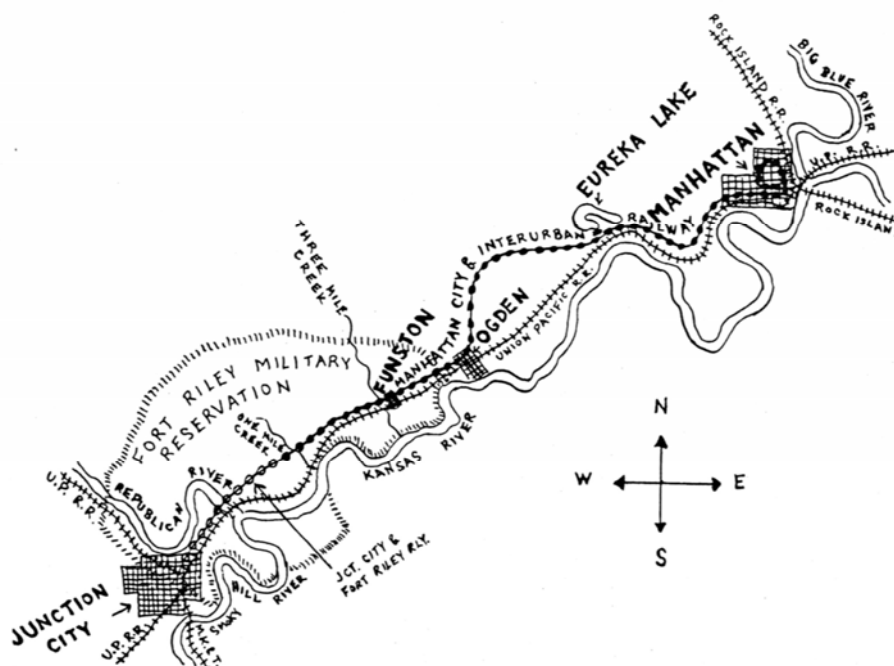


Figure 10. Map showing extent of combined track from Junction City to Manhattan, circa 1918 (Chandler, 183).

Shortly before completion of the line, the Manhattan City & Interurban Railway had purchased three large new streetcars (numbers 900, 901, and 902) from the St. Louis Car Company for \$7,500 each. The single-end cars had a cab for the motorman, a baggage compartment, and a large passenger compartment.³⁷ The Manhattan City & Interurban Railway schedule in 1914 had eleven trips each way daily, beginning at 6:25 a.m. from Manhattan and at 7:15 a.m. from Junction City. Cars left each terminus at 1.5 hour intervals, with the last leaving Manhattan at 11:00 p.m. and Junction City at 10:45 p.m. The cars ran seven days a week, and it took about seventy-five minutes to travel from one city to the other. Most stops along the combined twenty-mile route were in place by 1914,

³⁷ Ibid.

with a few more added on post as the installation grew. By 1918, according to Chandler:³⁸

The recognized station stops included downtown Manhattan, Union Pacific Depot, Yuma Street, 17th Street, 19th Street, Dodge's, Rockhill, May's, Shockley, Hill Top, Ryan's Road, Burtiss Crossing, Park House, Weiser, I.O.O.F., Stagg's, Conroy, Woodbine, Kemp, Fairview, Stone Barn, Antone, Hudspeth, Ogden, West Limits of Ogden, Army City, Hostess House, E.&R. Funston, Packer's Camp, Pawnee, 311th Stop, M.O.T.C., Hospital, Carr hall, Waters Hall, Hay Corral, Race Track, West Bank Republican River, Middle Switch [Red Box], Horner's, Water Works (18th Street), downtown Junction City.

Fares for the combined trip were set at 40 cents one way and 70 cents round-trip on the Manhattan City & Interurban Railway.³⁹ While the added revenue for utilizing its track helped the profits of Junction City & Fort Riley Railway, traffic volume did not substantially increase because many Fort Riley soldiers were deployed to the Mexican border in response to raids being conducted by the Mexican revolutionary general, Francisco "Pancho" Villa. However, with the United States entering World War I in 1917, a massive training camp was created at Fort Riley, resulting in a windfall for the interurban lines. First, the construction workers filled the cars both ways every day, and then, the soldiers used the line to seek excitement away from the fort whenever possible. The development of Camp Funston on the eastern side of the installation meant that the Junction City & Fort Riley Railway originally was left out in the cold because its track stopped over two miles from the site of the new training center. The company solved this problem by negotiating a lease agreement with the Manhattan City & Interurban Railway for the use of three miles of its track, running from the existing terminus at One Mile Creek to the new recreation and retail construction area known as Army City, on the edge of the military reservation near Ogden (Figure 11).⁴⁰

³⁸ Ibid., 182.

³⁹ Ibid., 113.

⁴⁰ Ibid.

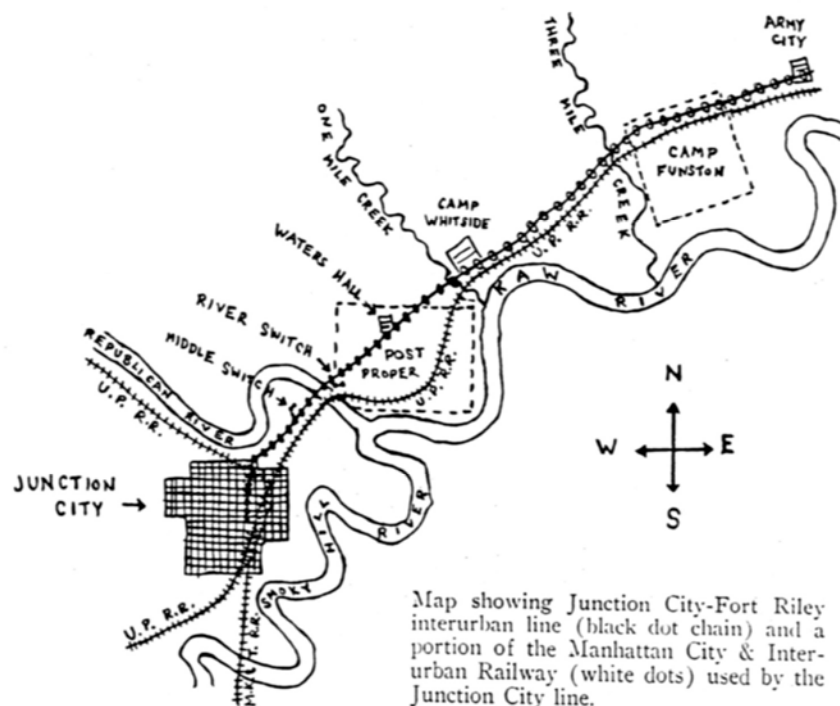


Figure 11. Map showing the shared lines on Fort Riley, circa 1918 (Chandler, 121).

At this time, the Junction City & Fort Riley Railway had been purchased by the United Light & Power Company of Junction City, and the new owners set out to make the improvements necessary to accommodate the influx of passengers.⁴¹ Stronger motors were installed on the cars, and four 100-passenger trailers (pulled by the cars) were ordered. A permanent building was planned for the eastern terminus at the One Mile Creek area on Fort Riley for a modern 500 kilowatt motor generator to increase power.⁴²

By 1917, the Manhattan City & Interurban Railway passenger levels had increased sufficiently to warrant the purchase of four additional streetcars. These were large, double-ended cars without a baggage compartment, and were purchased used.⁴³ This new equipment meant that each line could offer more cars and faster service, eventually providing a fifteen-minute schedule between the two towns. Service from Junction City to Fort Riley

⁴¹ Union Power and Light became United Power and Light in 1924 (Electronic and voice communication with Georganna While, Geary County Historical Museum, Junction City, KS on 22 September 2009).

⁴² Chandler, *Trolley through the Countryside*, 114. It is not clear if this building was ever constructed. There is no evidence of it today.

⁴³ *Ibid.*, 187.

took only eighteen minutes to complete; the terminus at Army City was reached in a total of forty-five minutes.⁴⁴

The other large adjustment to the interurban lines from the creation of Camp Funston was imposed on the Manhattan City & Interurban Railway. In mid-July 1917, the post engineer at Fort Riley informed the company that it had to relocate about 1.5 miles of track approximately 1,000' north of the camp. The involved track stretched from the point at which it entered the installation to the bridge at Three Mile Creek. The land beneath the tracks was needed for camp buildings and an expansion of the Union Pacific rail yard near the camp. In order to keep the lines running, the Army provided transport for the interurban passengers over the break between the lines. Shifting the track was accomplished in two weeks and cost the company \$15,000.⁴⁵

The vast numbers of soldiers at Fort Riley, combined with family and friends visiting the area, ensured a period of great profits for the interurban lines. For the Manhattan City & Interurban Railway, 1918 was its peak year, during which it collected \$331,000 in passenger fares, up 500 percent from 1915 revenues. Profits would have been even greater, if not for the influenza epidemic that began at Camp Funston in the fall of 1918. The pandemic was so virulent that the Army enforced a per-car passenger limit of 53–56, whereas unrestricted use saw upwards of 150 passengers crowd onto a car.⁴⁶

Unfortunately, revenues fell as fast as they had risen. The formal end of World War I on 11 November 1918 resulted in a swift loss of passengers when 50,000 men went home, and Camp Funston was closed. Both lines were hit hard, and retrenchment began immediately. The Junction City & Fort Riley Railway soon stopped using the competitor's track between One Mile Creek and Army City. The Manhattan City & Interurban Railway struggled for several years to maintain their use of the entire route, but in late 1921 ended its use of the Junction City line's track. This meant that there was no more through service between the two cities, only a transfer system. An ill-fated attempt to replace the electric cars with motor vehicles equipped with train wheels collapsed, and the company went into receivership in September 1922. The assets were purchased a few months later

⁴⁴ Ibid., 115.

⁴⁵ Ibid., 187.

⁴⁶ Ibid., 88.

by the C.L. Brown interests (United Power) of Abilene, Kansas, and the line reorganized as the United Traction Company.⁴⁷ Lines were re-electrified, and passengers once again arrived from Manhattan at the One Mile Creek transfer point. This organization lasted only until June 1924, when it went out of business and was purchased by United Power and Light.⁴⁸

The pull of the automobile was gaining ground rapidly during this era, and the cost of electricity was increasing. These forces put too much pressure on the interurbans, and something had to give. It turned out to be the Manhattan to Fort Riley line, which ceased operation in November 1928.⁴⁹ The tracks were immediately pulled up, and the operation was reduced to the Junction City – Fort Riley line. Revenue on this line was sufficient to keep the interurban going for another six years. Although reduced to two cars, the system ran until 1 March 1934, when it was replaced with motor bus service.⁵⁰

2.2.4 Three Mile Creek Bridge

Located along the track, one mile from Army City and three miles from Waters Hall, the bridge over Three Mile Creek was the last major bridge constructed for the line by the Manhattan City & Interurban Railway. By the time the line reached Three Mile Creek, the company's construction crews had a good amount of experience with building bridges. From Manhattan, there was an 80'-long steel bridge over Wildcat Creek, a 100'-long pile bridge over Shockley Gulch, a 300'-long pile trestle bridge over steep terrain, and two long pile bridges over Seven Mile Creek and its tributary near Ogden.⁵¹ Bridge construction followed the general wave pattern for the line, with a grading team farther in the distance, bridge crews following behind, and the "steel gang" laying the tracks bringing up the rear. Grading had begun for the final bridge across One Mile Creek while "the

⁴⁷ Ibid., 118.

⁴⁸ Ibid.

⁴⁹ Ibid., 119.

⁵⁰ Gaylynn Childs, "Museum Musings," *Junction City Daily Union*, 13 August 2001; The United Power and Light Company resulted from a merger in January 1924 of the Manhattan Gas and Electric, The Rocky Ford Power and Milling, and the United Traction Co. It is assumed this is the same United Power and Light operating the Junction City & Fort Riley Railway as of 1924. (Riley County Official Website 1921 - 1930, <http://www.rileycountyks.gov/index.aspx?NID=335&PREVIEW=YES>; Electronic and voice communication with Georganna While, Geary County Historical Museum, Junction City, KS on 22 September 2009).

⁵¹ Chandler, *Trolley through the Countryside*, 180.

pile driver and a big gang of men” were at work on the Three Mile Bridge in mid-May 1914.⁵² From that point, it was expected to take two more weeks to complete the concrete and steel bridge. Steel for the structure was procured from the Inland Steel Company of Chicago, Illinois. Inland Steel was begun in 1893 by Joseph and Philip Block. The initial steel works was greatly expanded in 1902 by the construction of a modern new steel mill in East Chicago, Indiana. By the time the Manhattan City & Interurban Railway purchased steel for the Three Mile Creek Bridge, Inland Steel was nearing an annual output of one million tons. It went on to be one of the largest steel companies in the United States.⁵³

Only one incident related to the bridge after construction was reported in the local papers. In 1917, a workman at Camp Funston was caught by a Manhattan line car while he was crossing the bridge. He was struck by the car and died a few days later. The interurban company was judged not to be at fault.⁵⁴

Shortly after the Manhattan line ceased operations in 1928, the tracks at Fort Riley were removed, including those over the bridge. The transmission lines and other features of the railway were removed soon after.⁵⁵ At an undetermined later date, a wooden surface was installed to create a footbridge for crossing the creek.

⁵² “Men Working at One-Mile,” *Manhattan Republic*, 14 May 1914, 4.

⁵³ Jonathan Keyes, “Inland Steel Co.,” *Encyclopedia of Chicago*, (<http://www.encyclopedia.chicagohistory.org/pages/642.html>).

⁵⁴ Chandler, *Trolley through the Countryside*, 191.

⁵⁵ Gaylynn Childs, “Museum Musings.”

3 Structural overview

The historic trolley bridge is a fixed, trussed arch, simple span bridge of concrete and metal. It features a “pony” type travel surface configuration. This means that traffic moves between parallel superstructures that lack overhead cross-bracing. The bridge is located between two other transportation features that run parallel to it. Approximately 160' south of the bridge is the Union Pacific rail line; approximately 190' north of the bridge is Huebner Road. The Williston Point-Huebner roundabout is located nearby beyond a small grove of trees (Figure 12). Vehicular access to the site is down a short gravel road and into a maneuvering area adjacent to the Union Pacific railroad. The bridge is in good condition with the exception of some skewed concrete monoliths that support the footbridge deck.



Figure 12. Aerial view of historic trolley bridge site (Fort Riley 2009).

3.1 Description of the Three Mile Creek Trolley Bridge

3.1.1 Trolley bridge superstructure

The trolley bridge superstructure is dominated by two parallel arched trusses that flank the bridge deck and carry traffic loads. The arches are classified as fixed, meaning there are no hinged connections to respond to stresses and loads. The trusses are of the Warren variety, distinguished by the presence of multiple equilateral or isosceles triangles formed by the web members which connect the top and bottom chords. The specific Warren truss used for the trolley bridge is the “subdivided” variant. This variant features secondary vertical web members (located at each deck beam) that bisect the triangles to reduce the length of the top chord members (Figure 13).



Figure 13. General view of Warren trusses (ERDC-CERL 2009).

Truss bottom chords, top chords, and web members are made up of 8", 6", and 4" double steel angles, respectively (Figure 14). Some top chords are stamped “INLAND,” (the Inland Steel Company of Chicago logo); some web members are stamped “ILLINOIS USA – 9” (Figure 15 and Figure 16). Steel gusset plates unite the multiple component truss members at the three points of each Warren triangle. The total rise of the arched trusses

measures 7'6" from the deck of the footbridge to the crown.⁵⁶ Intermediary gusset plate points along the arches measure 6'0" and 1'6" from the footbridge deck. To prevent outward deflection, knee braces made up of 3" single steel angles are positioned where the arched trusses meet the deck beams (Figure 17).



Figure 14. Truss top chords, bottom chords, and web members (ERDC-CERL 2009).

⁵⁶ Field conditions prevented measurement of the true rise from the spring line to the highest part of the arch.

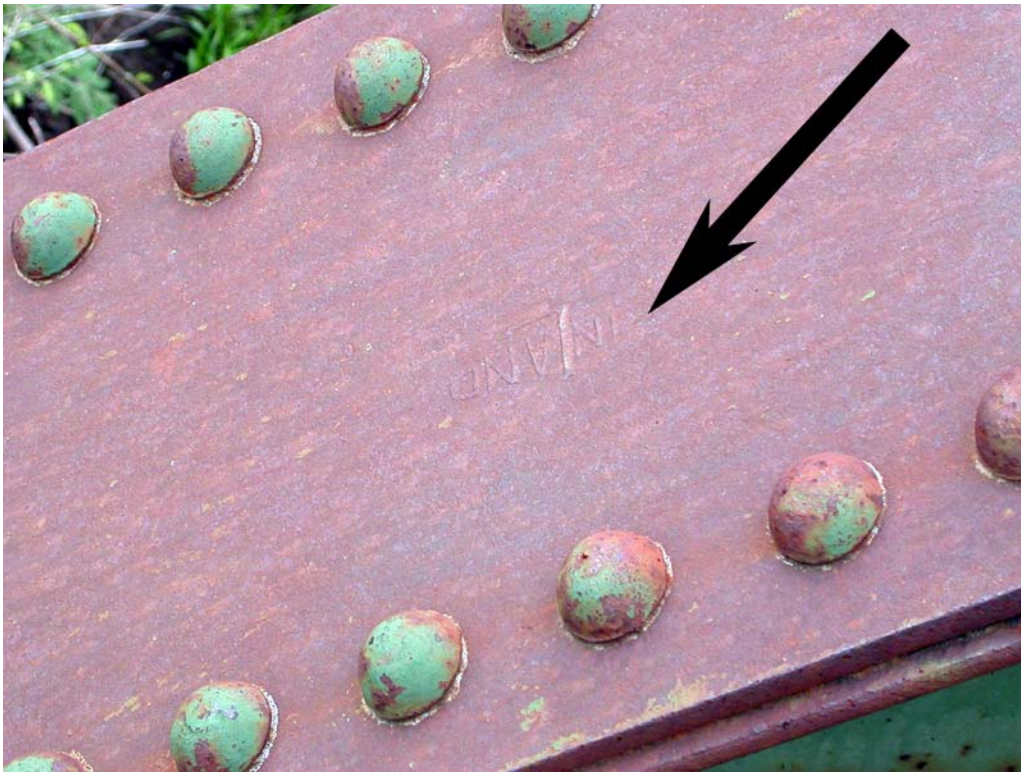


Figure 15. INLAND stamp on a truss top chord (ERDC-CERL 2009).



Figure 16. ILLINOIS USA - 9 stamp on a truss web member (ERDC-CERL 2009).



Figure 17. Gusset plate (left) and knee brace (right), (ERDC-CERL 2009).

The deck features four steel deck beams approximately 1'6" in depth that run perpendicular to the bridge span at 14'0" intervals. The deck beams rest on the inner angles of the Warren truss bottom chords and are supported laterally by cross-bracing (Figure 18). Each cross-brace is made up of two 4" single steel angles, one of which is notched to allow the other to pass through. Cross-bracing attachment is at the underside of the deck beams.



Figure 18. Deck beam-truss connection (left) and cross-bracing (right), (ERDC-CERL 2009).

3.1.2 Trolley bridge substructure

The superstructure described above is supported by a substructure. The substructure features a pair of fixed-type concrete bridge abutments measuring 3'2" by 21'0" in plan. It is 72'8" between the outer face of the east abutment to the outer face of the west abutment. In addition to their

supportive function, the abutments also act as end dams to retain soil and withstand earth pressure exerted by the bridge structure. Although not visible or documented, the abutments likely rest on subgrade footings that stand directly on the underlying soil, bedrock, or piles. Loads from the superstructure are transferred to 2'6"-deep abutment sills that run across the ravine side of the abutments. The sills feature 12" x 15" steel bearing plates that receive the arched truss ends and distribute design and traffic loads to the footings. The footings then distribute the combined load over a sufficient area to keep the support from sinking into the ground. The embankment directly under the bridge is covered with loose rubble to protect it from creek erosion (Figure 19 and Figure 20).



Figure 19. East supporting bridge abutment (ERDC-CERL 2009).



Figure 20. South and north views of west abutment, (ERDC-CERL 2009).

3.2 Description of footbridge addition

3.2.1 Footbridge superstructure

The trolley rails were removed from the bridge superstructure and a footbridge was put in their place to accommodate pedestrian traffic. The footbridge is entirely of wood frame construction. To support the footbridge deck, four 8"x 16" floor beams run above and transversely to the original steel deck beams. They run the entire 71'0" footbridge span and are positioned with irregular spacing to accommodate utility conduit. The floor beams are topped with 2" x 8" footbridge deck planks that are each 8' long. Ends of the deck are capped with 4" x 12" boards that are notched around a utility conduit.⁵⁷ To prevent falls, the footbridge features hand-height railings on both sides of its deck. The railings are made up of 4" x 4" vertical stanchions, 2" x 4" horizontal top and mid-height rails, and 2" x 6" handrails, but no balusters.⁵⁸ The outermost stanchion centerlines are positioned 1'2" from the deck end boards. The mid-height rail centerlines are 1'6" above the deck planks. The top rails act as blocking to support the stanchions and handrails. The distance from the deck planks to the top of the handrails is 3'4" (Figure 21).

⁵⁷ The east end boards of the footbridge deck have been modified.

⁵⁸ Stanchions are larger vertical support posts, and balusters are smaller closely spaced vertical supports.



Figure 21. Footbridge addition, (ERDC-CERL 2009).

3.2.2 Footbridge substructure

The footbridge upper superstructure is supported on concrete monoliths added to the original east and west bridge abutments. To accommodate for topography, the east abutment features an extra monolith that levels the footbridge deck. Over time some of the monoliths have moved and are no longer true with the original abutments (Figure 22).



Figure 22. Footbridge supporting concrete monoliths (ERDC-CERL 2009).

3.3 Utility lines

Subgrade conduit for four utility lines emerges and crosses the creek ravine at the trolley bridge. All lines are supported mid-span by the transverse steel deck beams. The center and south pipes are high pressure gas pipelines measuring 9" in diameter. The two lines paired on the north side of the bridge contain electrical wiring. The upper and lower electrical pipes measure 2-1/2" and 3-1/2" respectively in diameter (Figure 23).



Figure 23. Utility lines flank the footbridge (ERDC-CERL 2009).

3.4 Associated buildings

Buildings associated with the trolley bridge include Building 236 (Figure 24), located along Sheridan Avenue on Main Post. This building once served as the railway waiting station and baggage room for the trolley line. The building is now vacant.



Figure 24. Building 236, the Junction City & Fort Riley Railway Station (ERDC-CERL 2009).

4 Eligibility

The trolley bridge is significant for its association with the main national periods of interurban trolley development and use, from 1900–1930, and for its association with the two interurban lines in the Fort Riley area — the Manhattan City and Interurban Railway Company, and the Junction City and Fort Riley Railway. The property, however, lacks the integrity that would enable the significance of the structure to be represented. The trolley track, electrical poles, wires, switching apparatus, and all other physical manifestations of the interurban line have been removed. There is not even an easily discernable mark on the land to indicate where the interurban tracks were laid. As a result, the interurban trolley bridge over Three Mile Creek at Fort Riley is not eligible for nomination to the National Register of Historic Places.

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1913. Hip! hip! hurrah! *Manhattan Nationalist*.1:26 June 1913.

White, Georganna. 2009. Geary County Historical Museum, Junction City, KS. Electronic and voice communication with Susan Enscoe on 22 September 2009.

Appendix A: Field Photographs













REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
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14. ABSTRACT Through the years, laws have been enacted to preserve our national cultural heritage. The National Historic Preservation Act of 1966 as amended (NHPA) was created to provide guidelines and requirements aimed at preserving tangible elements of our past, primarily through the creation of the National Register of Historic Places (National Register or NRHP). Two sections of this legislation (Sections 110 and 106) contain requirements for federal agencies to address their cultural resources, defined as any prehistoric or historic district, site, building, structure, or object. The trolley bridge over Three Mile Creek at Fort Riley has been in place since 1914. Part of the Manhattan City and Interurban Railway Company (1909-1928), the structure previously did not previously undergo an assessment for a determination of eligibility (DOE). This project provides in-depth historical and architectural/engineering information about the bridge. The included documentation consists of descriptions, digital photographs, and known modifications to the bridge, as well as a historical context for the bridge. As a result of this thorough assessment, ERDC-CERL has determined that the bridge is not eligible for nomination to the National Register because of a loss of integrity by both the site and structure.					
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